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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,082	04/24/2001	Joo Soo Lim	049128-5006	2174
9629	7590	12/13/2005	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			QI, ZHI QIANG	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 12/13/2005

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/840,082  
Filing Date: April 24, 2001  
Appellant(s): LIM ET AL.

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Robert J. Goodell  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 10/7/2005 appealing from the Office action  
mailed 4/7/2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

This appeal involves claims 1-3,5-7,9,11-13,15-17,19 and 21.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-7, 9, 11-13, 15-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 6,297,862 (Murade).

Claims 1, 5, 9, 11, 15 and 19, AAPA discloses (paragraph 0006 – paragraph 0010; Figs. 1-3) a conventional liquid crystal display comprising:  
(concerning claims 1 and 11)

- a pixel electrode (10) at a pixel area between a gate line (14) and data line (13);
- a switching device (thin film transistor TFT) (12) at an intersection between the gate line (14) and the data line (13), and the function of the TFT is to drive the pixel electrode in order to display image;

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- drain electrode (7) of the TFT (12) is made of metal (metal thin film) connected to the pixel electrode (10) (see Fig.2);
- a light-shielding member (black matrix) (11) overlapping the switching device (TFT) (12);

(concerning claims 5 and 15)

- a charging device (a storage capacitor 19 between the gate line 14 as the lower electrode and the upper metal thin film 15 as the upper electrode) on the gate line (14), therefore, the charging device is a storage capacitor (19) including the upper electrode (metal) (15) and the gate line (14) and a gate insulating layer (4) (dielectric layer) between the gate line (14) and the upper electrode (15); or forming a charging device including upper electrode (15) made of metal over the gate line (14) and a gate insulating layer (dielectric layer);
- a light-shielding member (black matrix) (11) overlapping the drain electrode (7) of the switching device (TFT) (12) (the metal thin film);
- a light-shielding member (black matrix) (11) overlapping the charging device (19) (the storage capacitor);

(concerning claims 1, 9 and 19)

- drain electrode (7) made of metal (first metal thin film) connected to the pixel electrode (10) (see Fig.2);
- upper electrode (15) made of metal (second metal thin film) over the gate line (14) and a gate insulating layer (4) (dielectric layer);

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- a light-shielding member (black matrix) (11) on a front substrate (2) opposed to the rear substrate (1), and at a boundary portion between pixel areas (10) (see Figx.1 and 2);
- a light-shielding member (black matrix) (11) for blocking light incident onto the drain electrode (7) (first metal thin film) of the switching device (TFT) (12) and for blocking light incident onto the storage capacitor upper electrode (15) (second metal thin film).

AAPA does not expressly disclose the light-shielding member (black matrix) extending from an end at the pixel electrode side of a drain electrode (metal thin film) of the TFT (the extending portion would be a dummy black matrix) and extending from an end at the pixel electrode side of the storage capacitor upper electrode (metal thin film) (the extending portion would be a dummy black matrix) into the pixel area, and the light-shielding member (black matrix) covering and extending past all sides of the drain electrode (metal thin film) with a margin sufficient to block light incident on the metal thin film.

However, Murade discloses (col.7, line 11 – col.9, line 67; col.16, line 43 – col.17, line 53; Figs.1, 2, 11-14, 20) that the shielding film (black matrix 6) is formed around the pixel, and the shielding film (black matrix 6) covering the switching device (TFT, such as the source/drain regions 1a and 1b) and extending from the drain region into the pixel area, and the light shielding member (black matrix 6) covering and extending over the drain/source region, and the light shielding member (black matrix 6) also extending over the upper electrode of a storage capacitor (any two conductive

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layers and an insulating layer would constitute a capacitor) such as the data line (3) made of metal (aluminum) and gate line (2) (or there is a metal film 7) and insulating film (13, 12, 11) that constitutes a capacitance (charging device or storage capacitor) , and that is sufficient to block light incident onto the drain/source region (the metal thin film), and the light incident on the liquid crystal device does not affect the TFT performance, and a bright, high quality images will be ensured.

Since such light-shielding arrangement would sufficiently block the light incident to the TFT, so as to minimize the leakage current of the TFT. Murade indicates (col.9, lines 58 –67) that such black matrix (6) as shown in Fig.2 covering (overlapping and extending) the TFT including the drain electrode and storage capacitance and the side portion of the pixel electrode would present a display of high quality images free from image degrading effect such as cross-talk.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to extend the light-shielding film covering the drain electrode and covering the storage capacitor upper electrode from an end of the pixel electrode side, i.e., a light-shielding member (black matrix) covering and extending the drain electrode (metal thin film) and covering the upper electrode of a storage capacitor (charging device) with a margin sufficiently blocking light incident onto the drain electrode as claimed in claims 1, 5, 9, 11, 15 and 19 for minimizing the leakage current of the TFT, improving the display contrast, and presenting a display of high quality images free from image degrading effect such as cross-talk.

Claims 2, 6, 12 and 16, AAPA discloses (paragraph 0006 – paragraph 0010;

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Figs. 1-3) that the light-shielding member (11) is at a front substrate (2) opposed to a rear substrate (1) which includes the switching device (TFT 12), pixel electrode (10), the charging device (storage capacitor 19), and a liquid crystal layer between the two substrates.

Claims 3, 7, 13 and 17, AAPA discloses (paragraph 0006 – paragraph 0010; Figs. 1-3) that the light-shielding member is a black matrix.

3. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA and Murade as applied to claims 1-3, 5-7, 9, 11-13, 15-17 and 19 above, and further in view of US 6,266,117 (Yanagawa et al).

Claim 21, lacking limitation is such that the material of the light-shielding member is an organic material containing a black pigment,

However, Yanagawa discloses (co.7, lines 1-2) that the light shielding film is made of an organic resin in which, e.g., black pigment is dispersed, so that using the organic resin containing a black pigment as a light shielding member would be a routine skill in the art, and that was common and known in the art as the light shielding property of the organic material containing a black pigment to absorb light.

Therefore, it would have been obvious to those skilled in the art to use an organic material containing a black pigment as a light shielding member as claimed in claim 21 for shielding light because the organic material containing a black pigment having the property to absorb light.

**(10) Response to Argument**

Applicant's arguments concerning the invention of the light shielding film covering and extending past all sides of the drain metal film are not persuasive.

The secondary reference Murade clearly discloses (col.7, line 11 – col.9, line 67; col.16, line 43 – col.17, line 53; Figs.1, 2, 11-14, 20) that the shielding film (black matrix 6) is formed around the pixel, and the shielding film (black matrix 6) covering the switching device (TFT, such as the source/drain regions 1a and 1b) and extending from the drain region into the pixel area, and the light shielding member (black matrix 6) (see Fig.2 that is the Fig.1 from section line A-A') covering and extending over the drain/source region, and the light shielding member (black matrix 6) also extending over the upper electrode of a storage capacitor (any two conductive layers and an insulating layer would constitute a capacitor) such as the data line (3) made of metal (aluminum) and gate line (2) (or there is a metal film 7) and insulating film (13, 12, 11) that constitutes a capacitance (charging device or storage capacitor) (AAPA also discloses the black matrix 11 covering the storage capacitor 19 as shown in Fig.3), and that is sufficient to block light incident onto the drain/source region (the metal thin film), and the light incident on the liquid crystal device does not affect the TFT performance, and a bright, high quality images will be ensured. The reference Murade described in the summary of the invention that a black matrix can be safely omitted which does not mean without black matrix in the liquid crystal display device, and the Figs 1 and 2 clearly show the black matrix (6) covering and extending overlapping the drain electrode and a capacitance and the side of the pixel electrode.

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**(11) Related Proceeding(s) Appendix**

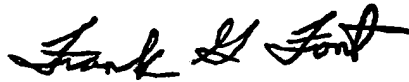
No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Conferees:

Fronk G. Font, SPE AU 2883



Andrew H. Hirshfeld AU 2854



Mike Qi Patent Examiner

